Claims after this response:

1 (Original).A method of transforming measurements of a device under test (DUT) produced by a test system, the method comprising:

determining a port-specific difference array, the difference array describing a difference between a first test fixture and a second test fixture at a corresponding test port of the test fixtures;

measuring a performance of the DUT using the test system, wherein the DUT is mounted in the second test fixture; and

applying the port-specific difference array, such that the measured DUT performance approximates a hypothetical DUT performance for the DUT mounted in the first test fixture and measured with the test system.

2(Original). The method of transforming measurements of Claim 1, wherein the determined port-specific difference array is an error adaptor that is applied to the measured performance of the DUT to essentially remove an effect of a port portion of the second test fixture and to add an effect of a corresponding port portion of the first test fixture on the measured performance.

3(Original). The method of transforming measurements of Claim 1, wherein determining a port-specific difference array comprises:

measuring characteristics of a set of calibration standards at corresponding ports of the first test fixture and the second test fixture by separately inserting each calibration standards of the set in each test fixture at a respective port; and

solving for elements of the difference array using results obtained from measuring characteristics of the calibration standard set for each test fixture.

4(Original). The method of transforming measurements of Claim 1, wherein applying the difference array to the measured performance of the DUT directly transforms the measured DUT performance into the approximation of the hypothetical performance.

5(Original). The method of transforming measurements of Claim 1, wherein applying the difference array modifies a calibration of a test system, such that the measured performance of the DUT produced using the test system is the hypothetical measured performance.

6(Original). The method of transforming measurements of Claim 1, wherein a performance of one or both of the first test fixture and the second test fixture and a performance of one or more calibration standards of the set used in determining the port-specific difference array are unknown or poorly known.

7(Original). The method of transforming measurements of Claim 1, wherein determining employs measurements of the test fixtures at a plurality of frequencies in a frequency range of interest for the DUT.

8(Original).The method of transforming measurements of Claim 3, wherein the calibration standards of the set connect corresponding pairs of ports to one another for each test fixture, such that all combinations of ports in each test fixture are separately connected as pairs for measuring the characteristics.

9(Original). The method of transforming measurements of Claim 3, wherein measuring comprises:

measuring a reflection parameter of each standard of the set of calibration standards separately for each port of the first test fixture; and

measuring a reflection parameter of each standard of the set of calibration standards separately for each corresponding port of the second test fixture,

wherein one or more of the standards of the set isolate the respective port from other ports of the respective test fixture.

10(Original). The method of transforming measurements of Claim 3, wherein measuring comprises:

measuring S-parameters for each standard of the set of calibration standards separately for each port pair of the first test fixture; and

measuring S-parameters for each standard of the set of calibration standards separately for each port pair of the second test fixture;

wherein the standards of the set are *thru* standards that connect pairs of ports together to form the port pairs.

11(Original). The method of transforming measurements of Claim 3, wherein solving for elements comprises:

solving several equations for several unknowns using the measured results, the solved unknowns representing the difference array elements.

12(Original). The method of transforming measurements of Claim 3, wherein solving for elements comprises:

optimizing a model using the measured results for each test fixture, the model representing one or more of the port-specific difference arrays, wherein optimizing comprises adjusting parameters of the model until a difference between test fixture measurements is minimized, the test fixture measurements being converted measurements of the second test fixture produced by the model using the measured results for the second test fixture and the measured results for the first test fixture, the model parameters representing the elements of the difference array.

13(Original). The method of transforming measurements of Claim 3, wherein measuring and solving are repeated for each port or each pair of ports of each of the test fixtures.

14(Original). The method of transforming measurements of Claim 3, wherein solving for elements of the difference arrays comprises determining a complex square root of one of the elements, wherein the square root is determined using data representing the element at more than one frequency.

15(Original). A method of calibrating a test system for more than one test fixture, the method comprising:

measuring parameters of a first test fixture having a calibration standard mounted in the first test fixture, measuring being performed using the test system connected to the first test fixture;

measuring parameters of a second test fixture having the calibration standard similarly mounted in the second test fixture, measuring being performed using the test system connected to the second test fixture; and

adjusting a calibration of the test system using differences between the measured parameters for corresponding ports of each test fixture,

wherein the adjusted calibration is a port-specific calibration of the test system such that measurements taken with the test system for a device under test (DUT) in either test fixture approximate each other.

16(Original). The method of calibrating of Claim 15, wherein measuring parameters of the first test fixture and the second test fixture comprises:

mounting a calibration standard to connect between a corresponding pair of ports of each test fixture; and

measuring parameters for each corresponding pair of ports of the test fixtures using a set of calibration standards, a different standard connecting a different corresponding pair of ports for each measurement, wherein at least one of the calibration standards of the set is a *thru* standard.

17(Original). The method of calibrating of Claim 15, wherein adjusting comprises:

determining a port-specific difference array for each port of the second test fixture from results of measuring parameters, the port-specific difference array representing an error adaptor that transforms the measurements of the DUT in the second test fixture into measurements of the DUT as if measured with the first test fixture.

18(Original). The method of calibrating Claim 17, wherein determining comprises:

constructing a port-pair model of the second test fixture with a specific error adaptor attached to each port of a pair of ports and a *thru* calibration standard mounted in the second test fixture connecting the pair of ports, such that a separate model is constructed for each pair ports of the second test fixture, each port-pair model converting a respective measured parameter into a corresponding converted measured parameter of the second test fixture; and

optimizing the port-pair model for each pair of ports of the second test fixture such that the converted measured parameters approximate the measured parameters of the first test fixture.

19(Original). The method of calibrating of Claim 18, wherein optimizing attempts to reduce a difference between the converted measured parameters of the second test fixture and the measured parameters of the first test fixture, such that when an optimization goal is reached, the error adaptors of the port-specific difference arrays are considered determined.

20(Original). The method of calibrating of Claim 15, wherein measuring parameters comprises measuring at a plurality of frequency points in a frequency range of interest for the DUT.

21(Original). A test system that measures a device under test (DUT) using different test fixtures comprising:

test equipment;

a test fixture that interfaces the DUT to the test equipment;

a computer connected to receive and process data from the test equipment; and

a computer program executed by the computer, the computer program comprising instructions that, when executed by the computer, implement determining a port-specific difference array that adjusts for a difference between a first test fixture and a second test fixture when each is used to interface the DUT for measurements.

22(Original). The test system of Claim 21, wherein the computer program further comprises instructions that implement measuring a performance of the DUT when the DUT is connected to the test equipment using the second test fixture; and instructions that implement applying the difference array to correct or adjust the measured performance of the DUT, such that the DUT performance measured using the second test fixture approximates a hypothetical DUT performance as if measured using the first test fixture to interface the DUT to the test equipment.

23(Original). The test system of Claim 22, wherein the instructions that implement applying comprise applying the difference array directly to the measured performance of the DUT produced by the test system to transform the measured DUT performance into the hypothetical DUT performance.

24(Original). The test system of Claim 22, wherein the instructions that implement applying comprise applying the difference array to a calibration of the test equipment to correct calibration coefficients of the test equipment, such that the measured performance of the DUT is equivalent to the hypothetical DUT performance.

25(Original). The test system of Claim 21, wherein the computer program further comprises instructions that implement determining a complex square root of an element of the difference array using values of the element at a plurality of frequencies.

26(Original). A method of matching measurements of a device under test (DUT) in a second test fixture to hypothetical measurements of the DUT in a first test fixture using a test system, the method comprising:

determining a port-specific difference array, the difference array describing a difference between the first test fixture and the second test fixture at a corresponding test port of the test fixtures, wherein an element of the difference arrays is determined using measurements of a set of calibration standards in the test fixtures, the measurements being performed at a plurality of frequencies with the test system.

27(Original). The method of matching measurements of Claim 26, further comprising:

measuring a performance of the DUT using the test system, wherein the DUT is mounted in the second test fixture; and

applying the port-specific difference array to measurements of the DUT mounted in the second test fixture to transform the measurements into measurements that match the hypothetical measurements of the DUT in the first test fixture.

28(Original). The method of matching measurements of Claim 26, wherein the element is determined by optimizing a model across the plurality of frequencies using the calibration standard measurements.

29(Original). The method of matching measurements of Claim 26, wherein the element is determined from a complex square root of a term of a port-specific error adaptor determined from the calibration standard measurements, the complex square root being computed using a plurality of values of the error adaptor term that corresponds to the plurality of frequencies.

30(Original). The method of matching measurements of Claim 29, wherein computing the complex square root comprises:

unwrapping a phase portion of data points representing the element at different frequencies to produce phase-unwrapped data points;

dividing a wrap-normalized phase of the data points by two to yield a phase portion of the square root; and

computing a positive real-valued square root of magnitudes of the data points to produce a magnitude portion of the square root.

31(Original). The method of matching measurements of Claim 30, further comprising before dividing a wrap-normalized phase:

estimating a group delay of the phase-unwrapped data points;

removing from the phase portion of the phase-unwrapped data points a number of complete phase wraps associated with a first data point to produce data points having the wrap-normalized phase, the number of complete phase wraps being computed using the estimated group delay.

32(Original). A method of calibrating a test system for more than one test fixture comprising:

connecting the test system to a first test fixture;

measuring parameters of the first test fixture according to a calibration standard;

connecting the test system to a second test fixture;

measuring parameters of the second test fixture according to the calibration standard;

calculating a set of calibration factors according to the measured parameters of the test fixtures; and

adjusting the test system according to the calibration factors such that a measurement of a device under test (DUT) yields approximately the same result regardless of which of the two test fixtures is utilized in the DUT measurement.